



PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of )  
R. Terry K. Baker ) Art Unit 1754  
Serial No. 10/015,353 ) Before the Examiner  
Filed: December 11, 2001 ) Stuart L. Hendrickson  
)

**Preparation of Multifaceted Graphitic  
Nanotubes**

Honorable Assistant Commissioner of Patents and Trademarks  
Washington, D. C. 20231

**DECLARATION UNDER 35 CFR 1.132**

Ralph T. Yang declares and says:

**That** he was granted a PhD in 1971 from Yale University of New Haven in Connecticut.

**That**he is presently the Dwight F. Benton Professor of Chemical Engineering at The University of Michigan at Ann Arbor, Michigan,

**That**he was awarded the 1999 American Carbon Society SGL Carbon Award (for "Most significant overall contributions to science or technology of carbon materials"), 1991 American Institute of Chemical Engineers (AIChE) Walker Award (for "Excellence in Contributions to Chemical Engineering Literature"), 1996 AIChE Institute Award in Gas Technology, 1997 AIChE Gerhold Award, and 2003 American Chemical Society National Award in Separation Science and Technology.

**That**he is an author of two books, more than 330 publications in the field of chemical engineering and holder of 20 U.S. Patents.

**That**he has conducted research in the areas of carbon materials including carbon fibrils, hydrocarbon catalysis, separations and chemical engineering.

**That**he is familiar with the production of carbon nanofibers using metal catalysts and carbon-containing gases.

**That**he has read and understands the invention claimed in the instant patent application.

**That** he has read and understands the office action from the United States Patent and Trademark Office dated May 20, 2004.

**That** he has read and understands the references cited against the instant claims, namely Moy et al. (U.S. Patent No. 6,143,689) and Rodriguez et al. (U.S. Patent No. 5,653,951).

**That**he is aware that the Examiner's opinion is that Moy et al. teach the making of carbon nanotubes from CO and Fe on MgO.

**That**in his opinion there is no expectation from either Moy et al. alone, or Rodriguez et al. alone, or both in combination, of producing multifaceted carbon nanostructures.

**That**Moy et al. would only suggest to one having at least ordinary skill in the art an improved method of producing "carbon fibrils" that are known to be cylindrical shaped carbon nanotubes.

**That**there would be no way to predict what the morphology of the resulting carbon structure would be by using a carbon-containing gas from the list of gases in the background of Moy et al. and substituting cobalt for iron as the catalytic metal.

**That**in his opinion Rodriguez et al. teaches the storage of hydrogen in various types of carbon nanostructures, the production of which are taught as being generally produced from a relatively long list of catalytic metals and carbon-containing gases.

**That**such a relatively long list of carbon-containing gases in combination with a relatively long list of catalytic metals is too general for him to predict what type of carbon nanostructures would be produced other than those specifically set forth in the Rodriguez et al. patent.

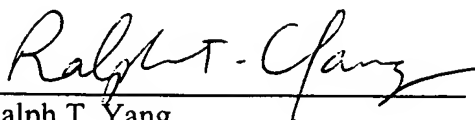
**That**the only carbon nanostructures one would expect from reading Rodriguez et al. would be straight carbon nanostructures from the use of iron alone and various shapes, such as spiral, helical, coiled, and branched depending on the amount of copper when present as a bimetallic catalyst with a Group VIII metal, preferably iron or nickel.

**That**there is no expectation for one having his skill in the art for what the morphology of a resulting carbon nanostructure would be if cobalt were substituted for iron and used with magnesium oxide.

I hereby declare that all statements made herein are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: June 7, 2004

  
Ralph T. Yang